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ANALYSIS OF GEOGRAPHICAL AND PHYSICAL LOCATION FISHERIES WATER BODIES FOR COMPREHENSIVE RESEARCH

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Abstract: The purpose of this article is to conduct comprehensive scientific research on the fishing grounds of the Caspian Sea within the Mangistau region. The study is focused on the geographical, hydrological and hydrochemical characteristics of reserve fishing areas, as well as the possibilities of their rational use for industrial fishery. Field research was carried out in 2022 at several sites in the Kazakh part of the Middle Caspian, where depth measurements, hydrochemical sampling, and biological observations were conducted. The analysis included the assessment of transparency, oxygen content, pH, and the condition of benthos and zooplankton communities. Particular attention was paid to the ecological state of water bodies, the risks of overfishing, and the depletion of valuable sturgeon species. The results obtained demonstrate that the studied reservoirs differ significantly in depth and physical conditions, which should be taken into account when planning their use for fishery purposes. The introduction of new fishing areas into economic circulation, supported by scientific justification, will enhance the sustainable development of fisheries and contribute to the socio-economic growth of the Mangistau region.

Key words: Mangistau region, hydrochemistry, fishery reservoir, water, bathymetria.

Introduction

As is known, the Zhaiyk-Caspian basin is a large fishery reservoir of Kazakhstan. The Caspian Sea basin is very promising in terms of the development of marine fisheries. The coastline of the Kazakhstan part of the Caspian Sea has a length of 2320 km. The ice-free part of the south of the Northern Caspian and the entire Middle Caspian with a length of approximately 800 - 900 km is suitable for fishing.

Currently, in the coastal areas of the Mangistau region, industrial and marine fishing is carried out by small fishing enterprises on small floating craft.

However, the bioresources of even the rich Caspian Sea are steadily depleting due to the intensification of industrial fishing, especially the stocks of sturgeon species of fish. [1, 2].

Conducting comprehensive scientific research work on these fishing grounds will speed up the process of introducing them into economic circulation and increase the production of fish and other aquatic animals in the Caspian Sea.

Materials and research methods.

Field studies were conducted from June 27 to July 6, 2022 in reserve fishing grounds located in the waters of the Kazakh part of the middle Caspian within the Mangistau region.

At each studied site, the length, width, area of the maximum and average depth of the sites were measured. The depth of the sites was measured by the echo sounder GARMIN GPSMAP 580/585, samples were taken for hydrochemistry, zooplankton and benthos. Water samples were taken by Molchanov's bathometer. Water-soluble oxygen, pH values, and carbon dioxide were determined. Visual observations were made for the presence of floating oil films, accumulation of dying algae, and the appearance of increased water turbidity [3-4].

Results and discussion.

The studied areas of the reservoir are located in the eastern part of the Caspian Sea and territorially belongs to the Mangistau region. The nearest settlements are the city of Zhanaozen (70 km) and Aktau (170 km), which communicate with each other and the studied district by highways practically By to everything paths following (drawing 1), table 1.

Drawing 1 – Location of the study areas in the northern Caspian Sea withinMangistau areas

On each reserve fishing industry plot conducted physical dimensions: length, width, area and depth of the plots. The depth of the plots was measured echo sounder GARMIN GPSMAP 580/585 (table 1).

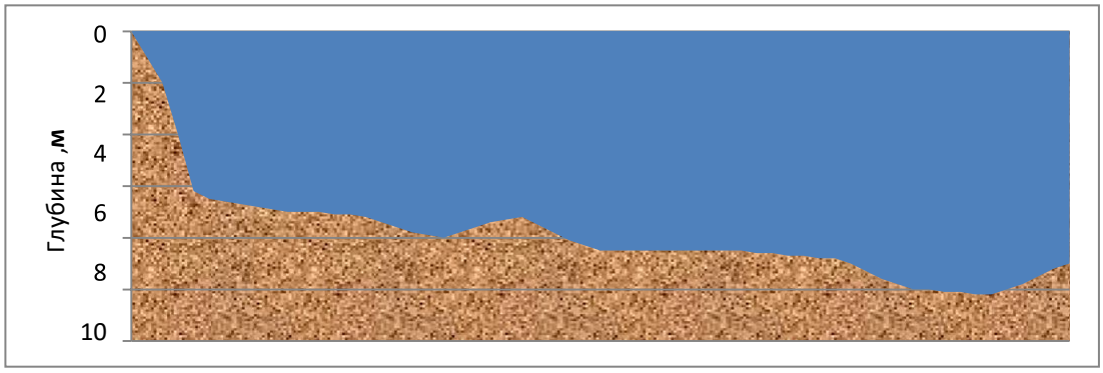
Table 1 - Meteorological And hydrophysical characteristic reserve plots,2017 g.

Date	Plots	Directionwinds	Sea swell	Depth on place of selection samples, m	Transparencywater. m
28.06.22	6.1	Oriental	1-2	10.2	7.0
29.06.22	5.4	West	1	18.0	10.0
01.07.22	4.4	North- west	0.5	22.5	10.0
02.07.22	4.2	North-west	0.5-1	25.0	6.8
03.07.22	2.6	West	0.5	2.5	3.8

For definitions depths, bottom researched fishing areas conducted relevant work. By received data presented transverse cut 5 fishing areas (drawings 2).

Fishing area 1

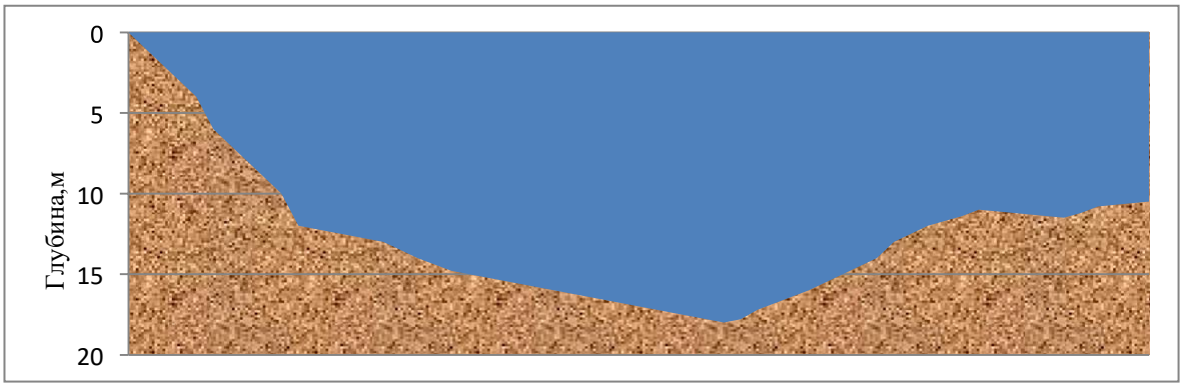
IN In the studied section of the fishery, the maximum depth was 10.2 m,average - 7.9 m. The total length of the section from the shore in cross section, which was subjected to bathymetric filming – 6 km; in longitudinal section - 10m.



Drawing 2 - Transverse section of the site 6.1

Fishing area 5.4.

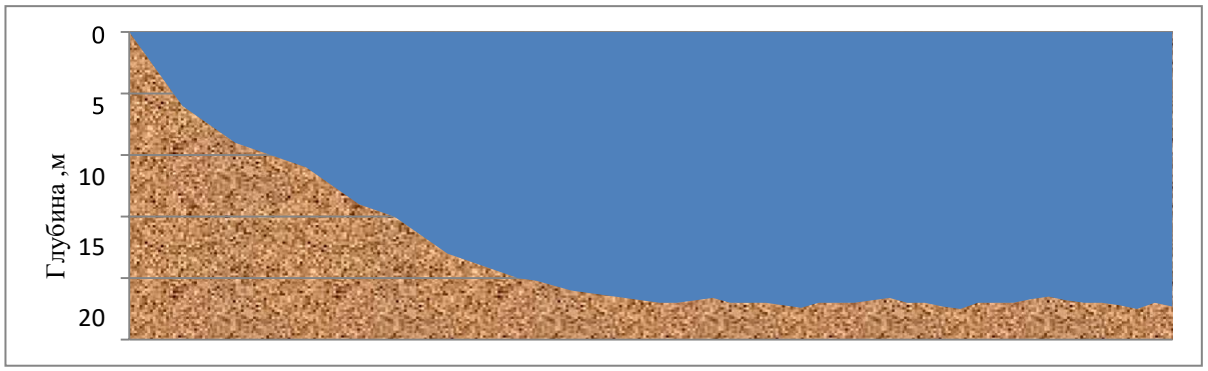
IN in the studied section of the fishery, the maximum depth was 18.0 m,and the average is 12.6 m. The total length of the section from the coast in cross-section is 6 km;longitudinal section – 10m.



Drawing 3 - Transverse section of the site 5.4

Fishing industry plot 4.4

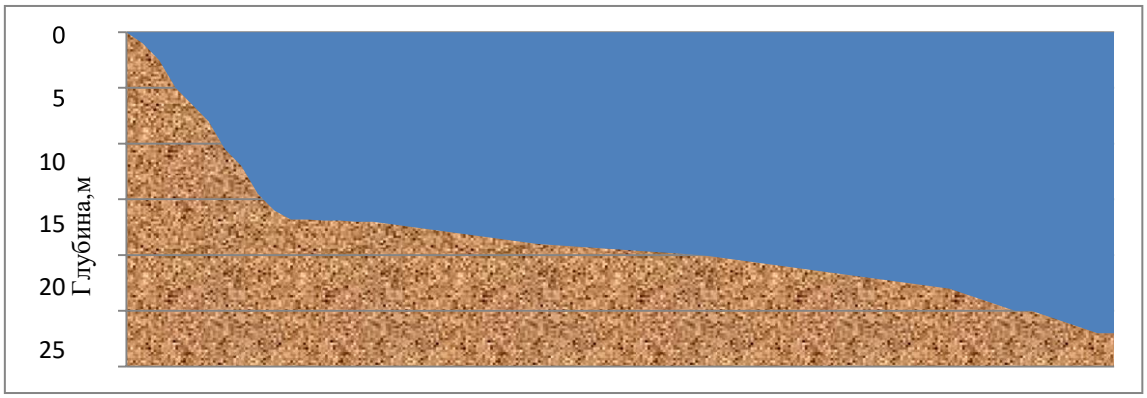
IN in the studied section of the fishing area the maximum depth was 22.5 m,average - 18.0 m. General length plot from banks V transverse in section - 6 km.



Drawing 4 - Transverse cut plot 4.4

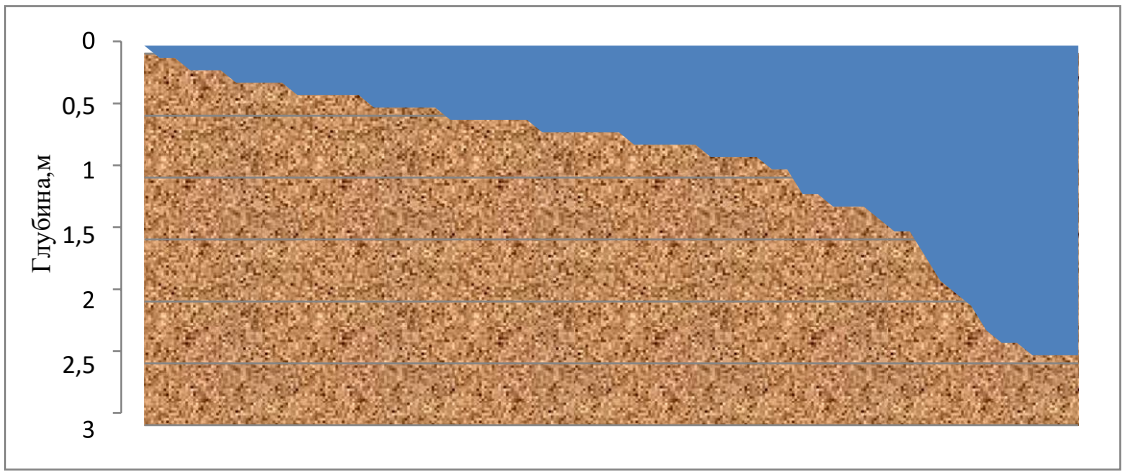
Fishing area 4.2

IN under study in between fishery maximum depth compiled - 27 m,average -18.5m. General length plot from banks V transverse section - 6 km.



Drawing 5 - Transverse cut plot 4.2

Fishing industry plot - 2.6



Drawing 6 - Transverse section of the site 2.6

Maximum depth 3.8 m, average 1.5 m. General length plot frombanks V transverse section up to 6 km.

As can be seen from the bathymetric data, the bottom bed of the area under study is 5.4 The terrain is hilly and the depth of the area in cross-section varies greatly and exceeds 15 m. Plots 4.4., 4.2, 2.6 have a smooth and relatively smooth bias towards to the sea.

Conclusions. An analysis of the conducted studies showed that the reserve fishing waters are located at various depths from 3.8 m to 25.0 m (maximum during the study period) and were daily exposed to the influence of natural factors (waves, transparency).

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КЕШЕНДІ ЗЕРТТЕУЛЕР ҮШІН БАЛЫҚ ШАРУАШЫЛЫҒЫ СУ АЙДЫНДАРЫНЫҢ ГЕОГРАФИЯЛЫҚ ЖӘНЕ ФИЗИКАЛЫҚ ОРНАЛАСУЫН ТАЛДАУ

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Аңдатпа. Бұл мақаланың мақсаты – Маңғыстау облысы аумағындағы Каспий теңізінің балық шаруашылығы су айдындарына кешенді ғылыми зерттеулер жүргізу. Зерттеу резервтік балық аулау учаскелерінің географиялық, гидрологиялық және гидрохимиялық сипаттамаларын, сондай-ақ оларды өнеркәсіптік балық аулау мақсатында ұтымды пайдалану мүмкіндіктерін зерттеуге бағытталған. Далалық зерттеулер 2022 жылы Орта Каспийдің Қазақстандық бөлігінің бірнеше учаскесінде жүргізіліп, онда тереңдік өлшеулері, гидрохимиялық сынамалар алу және биологиялық бақылаулар жүзеге асырылды. Талдау барысында судың мөлдірлігі, оттегінің мөлшері, pH деңгейі, сондай-ақ бентос пен зоопланктон қауымдастықтарының жағдайы бағаланды. Су айдындарының экологиялық жағдайына, балықты шамадан тыс аулау қаупіне және бағалы бекіре тұқымдас балықтардың азаюына ерекше назар аударылды. Алынған нәтижелер зерттелген су айдындарының тереңдігі мен физикалық жағдайлары бойынша айтарлықтай ерекшеленетінін көрсетті, бұл оларды балық шаруашылығы мақсатында пайдалану кезінде ескерілуі тиіс. Ғылыми негіздемемен жаңа балық аулау учаскелерін шаруашылық айналымға енгізу балық шаруашылығының тұрақты дамуына және Маңғыстау облысының әлеуметтік-экономикалық өсуіне ықпал етеді.

Түйін сөздер: Маңғыстау облысы, гидрохимия, балық шаруашылығы, су айдыны, су, батиметрия.

АНАЛИЗ ГЕОГРАФИЧЕСКОГО И ФИЗИЧЕСКОГО РАСПОЛОЖЕНИЯ РЫБОХОЗЯЙСТВЕННЫХ ВОДОЁМОВ ДЛЯ КОМПЛЕКСНЫХ ИССЛЕДОВАНИЙ

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Аннотация. Цель данной статьи заключается в проведении комплексных научных исследований рыбохозяйственных водоёмов Каспийского моря в пределах Мангистауской области. Исследование направлено на изучение географических, гидрологических и гидрохимических характеристик резервных рыбопромысловых участков, а также возможностей их рационального использования для промышленного рыболовства. Полевые исследования были проведены в 2022 году на нескольких участках казахстанской части Среднего Каспия, где осуществлялись измерения глубин, отбор гидрохимических проб и биологические наблюдения. Анализ включал оценку прозрачности воды, содержания кислорода, уровня pH, а также состояния сообществ бентоса и зоопланктона. Особое внимание уделялось экологическому состоянию водоёмов, рискам чрезмерного вылова рыбы и сокращению численности ценных осетровых видов. Полученные результаты показывают, что исследуемые водоёмы существенно различаются по глубине и физическим условиям, что необходимо учитывать при планировании их использования в рыбохозяйственных целях. Введение новых рыбопромысловых участков в хозяйственный оборот при наличии научного обоснования будет способствовать устойчивому развитию рыбного хозяйства и социально-экономическому росту Мангистауской области.

Ключевые слова: Мангистауская область, гидрохимия, рыбохозяйственный водоём, вода, батиметрия.